

JAN 09 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Zhu et al.

Application No.: 10/733,858

Filed: December 10, 2003

Title: BIASED H₂ ETCH PROCESS IN
DEPOSITION-ETCH-DEPOSITION GAP
FILLAttorney Docket No.:
NOVLP090/NVLS-002888

Examiner: Smith, Bradley

Group: 2891

Confirmation No. 7860

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as first-class mail on January 9, 2006 in an envelope addressed to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

Signed: _____

Natalie Morgan

INFORMATION DISCLOSURE STATEMENT
37 CFR §§1.56 AND 1.97(b)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The references listed in the attached PTO Form 1449, copies of which are attached, may be material to examination of the above-identified patent application. Applicants submit these references in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make these references of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that these references indeed constitute prior art.

This Information Disclosure Statement is: (i) filed within three (3) months of the filing date of the above-referenced application, (ii) believed to be filed before the mailing date of a first Office Action on the merits, or (iii) believed to be filed before the mailing of a first Office Action after the filing of a Request for Continued Examination under §1.114. Accordingly, it is believed that no fees are due in connection with the filing of this Information Disclosure Statement. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 500388 (Order No. NOVLP090).

Respectfully submitted,

BEYER WEAVER & THOMAS, LLP

James E. Austin

Registration No. 39,489

P.O. Box 70250
Oakland, CA 94612-0250

BEST AVAILABLE COPY

JAN 09 2006

Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No.	Application No.:
	NOVLP090/NVLS-2888	10/733,858
	Applicant:	
	Zhu et al.	
	Filing Date	Group
	December 10, 2003	2891

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub- class	Filing Date
	A1	6,200,412	03.2001	Kilgore et al.			
	A2	6,232,196	5/12/01	Raaijmakers et al.			
	A3	2003/0207580	11/6/03	Li et al.			
	A4	5,384,068	11/10/98	Chern et al.			
	A5	2004/0082181	4/29/04	Doan et al.			
	A6	6,596,653	7/22/03	Tan et al.			
	A7	5,711,998	1/27/98	Shufflebotham			
	A8	6,184,158	2/6/01	Shufflebotham et al.			
	A9	2001/0044203	11.2001	Huang et al.			
	A10	5,129,958	07.1992	Nagashima et al.			
	A11	6,106,678	08.2000	Shufflebotham et al.			
	A12	2002/0179570	12.2002	Mathad et al.			
	A13	6,599,829	07.2003	Smith et al.			
	A14	5,252,178	10.1993	Moslehi, Mehrdad M.			
	A15	6,400,023	06.2002	Huang, Richard J.			
	A16	6,846,745 B1	01.25.05	Papasouliotis et al.			
	A17	6,136,703	10.2000	Vaartstra, Brian A.			
	A18	2002/0052119	05.2002	Van Cleemput			
	A19	6,794,290 B1	09.21.04	Papasouliotis et al.			
	A20	6,846,391 B1	01.25.05	Papasouliotis et al.			
	A21	6,410,446	06.2002	Tsai et al.			
	A22	6,737,334	05.2004	Ho et al.			
	A23	6,787,483 B1	09.07.04	Bayman et al.			
	A24	5,282,925	2/1994	Jeng et al.			
	A25	6,124,211	09.2000	Butterbaugh et al.			
	A26	5,516,729	05.1996	Dawson et al.			
	A27	2004/0241342	12.2004	Karim et al.			
	A28	6,077,574	06.2000	Usami			
	A29	6,808,748 B2	10.2004	Kapoor et al.			
	A30	2004/0020894	02.2004	Williams et al.			
	A31	2003/0003244	01.2003	Rossman			
	A32	2003/0003682	01.2003	Moll et al.			
	A33	2003/0165632	09.2003	Lin et al.			
Examiner				Date Considered			

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No.	Application No.:
	NOVLP090/NVLS-2888	10/733,858
	Applicant:	
	Zhu et al.	
	Filing Date	Group
	December 10, 2003	2891

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub- class	Translation	
							Yes	No
	B1	JP 2003-031,649	01.2003	Japan				

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	C1	U.S. Office Action mailed August 6, 2003, from U.S. Application No. 10/058,897. [Atty Dckt. NOVLP040X1/NVLS-000607]
	C2	U.S. Office Action mailed January 29, 2004, from U.S. Application No. 10/058,897. [Atty Dckt. NOVLP040X1/NVLS-000607]
	C3	U.S. Office Action mailed May 21, 2004, from U.S. Application No. 10/058,897. [Atty Dckt. NOVLP040X1/NVLS-000607]
	C4	U.S. Office Action mailed August 10, 2004, from U.S. Application No. 10/271,333. [Atty Dckt. NOVLP054/NVLS-000719]
	C5	U.S. Office Action mailed April 14, 2004, from U.S. Application No. 10/271,333. [Atty Dckt. NOVLP054/NVLS-000719]
	C6	U.S. Office Action mailed June 29, 2005, from U.S. Application No. 10/728,569. [Atty Dckt. NOVLP087/NVLS-2880]
	C7	Papasoulotis et al., "Hydrogen-Based Phosphosilicate Glass Process for Gap Fill of High Aspect Ratio Structures", Novellus Systems, Inc., filed October 11, 2002, Application No. 10/271,333, pages 1-28. [Atty Dkt No. NOVLP054/NVLS-000719].
	C8	Guari et al., "Method of Preventing Structures Erosion During Multi-Step Gap Fill", Novellus Systems, Inc., filed December 4, 2003, Application No. 10/728,569, pages 1-29. [Atty Dkt No. NOVLP087/NVLS-2880].
	C9	U.S. Office Action mailed January 7, 2005, from U.S. Application No. 10/728,569. [Atty Dckt. NOVLP087/NVLS-2880]
	C10	U.S. Office Action mailed November 6, 2002, from U.S. Application No. 09/996,619. [Atty Dckt. NOVLP040/NVLS-000592]
	C11	U.S. Office Action mailed March 2, 2004, from U.S. Application No. 10/442,846. [Atty Dckt. NOVLP040D1/NVLS-000592D1]
	C12	Bayman et al., "Gap Fill For High Aspect Ratio Structures", Novellus Systems, Inc., filed July 13, 2004, Application No. 10/890,655, pages 1-24. [Atty Dkt No. NOVLP040D2/NVLS-000592D2].
	C13	U.S. Office Action mailed July 25, 2005, from U.S. Application No. 10/890,655. [Atty Dckt. NOVLP040D2/NVLS-000592D2]
	C14	U.S. Office Action mailed November 17, 2005, from U.S. Application No. 10/316,987. [Atty Dckt. NOVLP053/NVLS-000706]
Examiner		Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)	Atty Docket No. NOVLP090/NVLS-2888	Application No.: 10/733,858
Information Disclosure Statement By Applicant	Applicant: Zhu et al.	
(Use Several Sheets if Necessary)	Filing Date December 10, 2003	Group 2891

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	C15	U.S. Office Action mailed April 30, 2004, from U.S. Application No. 10/389,164. [Atty Dkt. NOVLP061/NVLS-000756]
	C16	Sutanto et al., "Method For Controlling Etch Process Repeatability", Novellus Systems, Inc., filed September 2, 2003, Application No. 10/654,113, pages 1-31. [Atty Dkt No. NOVLP079/NVLS-002850].
	C17	U.S. Office Action mailed June 17, 2004, from U.S. Application No. 10/654,113. [Atty Dkt. NOVLP079/NVLS-002850]
	C18	U.S. Office Action mailed December 2, 2004, from U.S. Application No. 10/654,113. [Atty Dkt. NOVLP079/NVLS-002850]
	C19	U.S. Office Action mailed March 31, 2005, from U.S. Application No. 10/654,113. [Atty Dkt. NOVLP079/NVLS-002850]
	C20	Bayman et al., "Process Modulation to Prevent Structure Erosion During Gap Fill", Novellus Systems, Inc., filed September 7, 2004, Application No. 10/935,909, pages 1-30. [Atty Dkt No. NOVLP105/NVLS-2929].
	C21	Papasoulitotis et al., "Dynamic Modification of Gap-Fill Process Characteristics", Novellus Systems, Inc., filed September 21, 2004, Application No. 10/947,424, pages 1-25. [Atty Dkt No. NOVLP113/NVLS-2949].
	C22	Hook et al., "The Effects of Fluorine on Parametrics and Reliability in a 0.18- μ m 3.5/6.8 nm Dual Gate Oxide CMOS Technology", IEEE Transactions on Electron Devices, Vol. 48, No. 7, July 2001, pp. 1346-1353.
	C23	Shanker et al., "Hydrogen Treatment Enhanced Gap Fill", Novellus Systems, Inc., filed March 16, 2005, Application No. 11/082,369, pages 1-33. [Atty Dkt No. NOVLP129/NVLS-3055].
	C24	Papasoulitotis et al., "Deposition Profile Modification Through Process Chemistry", Novellus Systems, Inc., filed December 9, 2002, Application No. 10/316,987, pages 1-35. [Atty Dkt No. NOVLP053/NVLS-000706].
	C25	U.S. Office Action mailed January 27, 2005, from U.S. Application No. 10/316,987. [Atty Dkt. NOVLP053/NVLS-000706]
	C26	U.S. Office Action mailed July 14, 2005, from U.S. Application No. 10/316,987. [Atty Dkt. NOVLP053/NVLS-000706]
	C27	Lang et al., "Helium-Based Etch Process in Deposition-Etch-Deposition Gap Fill", Novellus Systems, Inc., filed June 22, 2005, Application No. 11/159,834, pages 1-29. [Atty Dkt No. NOVLP135/NVLS-3016].
	C28	Lang et al., "Strain Engineering - HDP Thin Film With Tensile Stress For FEOL and Other Applications", Novellus Systems, Inc., filed November 17, 2004, Application No. 10/991,890, pages 1-35. [Atty Dkt No. NOVLP119/NVLS-2988]
Examiner		Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Pg. 3 of 4

JAN. 9 2006 4:36PM

5106630920

RECEIVED
CENTRAL FAX CENTER

NO. 361 P. 17/17

JAN 09 2006

Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. NOVLP090/NVLS-2888 Applicant: Zhu et al. Filing Date December 10, 2003	Application No.: 10/733,858 Group 2891
--	---	---

Other Documents

		Other Documents	
Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication	
	C29	U.S. Office Action mailed October 18, 2005, from U.S. Application No. 10/947,424. [Atty Dckt. NOVLP113/NVLS-2949]	
	C30	Lang et al., "Using Water (H ₂ O) To Replace Oxygen (O ₂) In A Silicon Dioxide (SiO ₂) Thin Film Deposition Process for HDP STI Technology", Novellus Systems, Inc., filed November 9, 2005, Application No. 11/272,487, pages 1-25. [Atty Dkt No. NOVLP136/NVLS-3082].	
Examiner		Date Considered	

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.